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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/557,577	04/21/2000	Jon Faiz Kayyem	A-63761-5/RFT/RMS/RMK	6551

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EXAMINER

MARSCHEL, ARDIN H

ART UNIT	PAPER NUMBER
1631	20

DATE MAILED: 08/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/557,577	KAYYEM ET AL.
	Examiner	Art Unit
	Ardin Marschel	1631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 09 June 2003.

2a) This action is FINAL.                            2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 47-49,51-53,60 and 61 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 47-49,51-53,60 and 61 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) 47-49,51-53,60 and 61 are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \*    c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

1) Notice of References Cited (PTO-892)                            4) Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)                            5) Notice of Informal Patent Application (PTO-152)  
 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 16.                            6) Other: \_\_\_\_\_

### **DETAILED ACTION**

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission, filed on 6/9/03, has been entered.

Applicants' arguments, filed 6/9/03, have been fully considered but they are not deemed to be persuasive. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn. The following rejections and/or objections are either reiterated or newly applied. They constitute the complete set presently being applied to the instant application.

### **TITLE**

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The present title cites nucleic acids whereas, in contrast, the presently pending claims are directed to peptide nucleic acid embodiments.

### **PRIOR ART**

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 47-49 and 51-53 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Meade et al. (WO 95/15971).

Consideration of instant claim 47, for example, reveals that a composition is claimed wherein a chemical substituent is covalently attached to the *α*-carbon of a monomeric unit. No specific limitation on what a chemical substituent is has been set forth thus leaving this extremely broadly defined. It is noted that any physical item is a chemical and, if attached to something is thus a chemical substituent if there is no limitation as to what a chemical constituent is. An electrode with its attachment to a monomer of a peptide nucleic acid is deemed to therefore be a chemical substituent as instantly claimed with an internal attachment (as in instant claims 48 and 49). Meade et al. Describes the oligonucleotides therein as inclusive of peptide nucleic acids as on page 14, lines 15-30. The covalent attachment of an electrode to a peptide bond on such an oligonucleotide is described on page 34, lines 10-30, wherein an amine, which is well known in the structure of a peptide nucleic acid is utilized for attachment to an electrode. An electrode is clearly an electron transfer moiety as required in instant claims 51 and 52. Page 34, line 18, cites "Os" which is a transition metal in a complex as required in instant claim 53. Thus, the above listed instant claims are anticipated.

Claims 47-49 and 51-53 are rejected under 35 U.S.C. 102(e)(2) as being clearly anticipated by Megerle (P/N 5,874,046).

As set forth previously and further pointed to in the above reference, Megerle also discloses the instant invention as does Meade et al. (above) at column 1, lines 56-65, and column 4, lines 47-47-61, and regarding amine attachment at column 13, lines 14-25. The arguments regarding Meade et al. have been responded to above by specifically citing disclosures and reasoning that support this rejection and are reiterated here.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 47-49, 51, 53, 60, and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mirkin et al. (P/N 6,361,944).

Mirkin et al. describes complexes involving nanoparticles with attached oligonucleotides. The specific transition metal complex, ferrocene, is described as attached in these complexes is set forth in column 34, lines 2-32, wherein it is detected via cyclic voltammetry which is well known to include an electrode. Within the complexes of the reference, the substitution of peptide nucleic acid for the

oligonucleotide is motivated and suggested as a specie of complex in column 42, lines 4-14.

Thus, it would have been obvious to someone of ordinary skill in the art at the time of the instant invention to practice clearly suggested species within the embodiments described in the reference to result in PNA-ferrocene complexes which are the embodiments of instant claims 60 and 61 as well as therefore species within the claims from which they directly or indirectly depend.

### **INFORMALITIES**

The disclosure is objected to because of the following informalities:

In the submitted claim set, claims 54-59 were described as being canceled, but confusingly what appears to be a claim is set forth after the "(Canceled)" notation set forth as "A composition...". The seems to possibly be erroneously included in the claim set.

Appropriate correction is required.

No claim is allowed.

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993)(See 37 CFR § 1.6(d)). The CM1 Fax Center number is either (703)308-4242 or (703)305-3014.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ardin Marschel, Ph.D., whose telephone number is (703)308-3894. The examiner can normally be reached on Monday-Friday from 8 A.M. to 4 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward, Ph.D., can be reached on (703)308-4028.

Any inquiry of a general nature or relating to the status of this application should be directed to Legal Instrument Examiner, Tina Plunkett, whose telephone number is (703)305-3524 or to the Technical Center receptionist whose telephone number is (703) 308-0196.

August 22, 2003

*Ardin H. Marschel*  
ARDIN H. MARSCHEL  
PRIMARY EXAMINER